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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,601	10/17/2003	Steve A. Jacob	10018496-1	2433

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HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER	
DALEY, CLIFTON G	

ART UNIT	PAPER NUMBER
2624	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JERRY.SHORMA@HP.COM
mkraft@hp.com
ipa.mail@hp.com

Office Action Summary	Application No.	Applicant(s)	
	10/688,601	JACOB, STEVE A.	
	Examiner	Art Unit	
	Clifton G. Daley	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,9,12,15-18,21-27 and 29* is/are rejected.

7)☒ Claim(s) *7, 8, 10, 11, 13, 14, 19, 20, 28 and 30* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/17/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to because it is not clear what reference character 526 in Fig. 5 is pointing to. Also, paragraph 0048 of the specification refers to reference character 602 in Fig. 6 as both the vertical axis and a surface. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Allowable Subject Matter

1. **Claims 7, 8, 10, 11, 13, 14, 19, 20, 28 and 30** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. **Claim 26** recites the limitation "... further away from the second neutral axis" in paragraph 1. There is insufficient antecedent basis for this limitation in the claim. For purposes of examination, the limitation is treated as reading "... further away from the neutral axis".

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 5, 6, 9, 15, 18, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawada et al. (US 7023582).

Regarding claims 1 and 15, Sawada teaches a processor-readable medium comprising processor-executable instructions **(Fig. 2, 32)** and associated apparatus **(Fig. 2)** for mapping color data, the processor-executable instructions comprising instructions for: **setting** a degree to which BG color coefficient generation is similar for process-neutral and K-only neutral images to produce BG coefficients **(column 12, line 4 to column 14, line 11)**; **setting** a degree to which UCR color coefficient generation is similar for process-neutral and K-only neutral images to produce UCR coefficients **(column 12, line 4 to column 14, line 11)**; and mapping CMY color data to CMYK color data using the produced BG coefficients and the produced UCR coefficients **(Fig. 3)**.

Sawada does not explicitly disclose **adjusting** the similarity of BG or UCR color coefficient generation for process-neutral and K-only neutral images.

However, it is implicit in Sawada's disclosure that any selection of settings would **adjust** the similarity of BG or UCR color coefficient generation for process-neutral and K-only neutral images. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the settings to **adjust** the similarity of BG or UCR color coefficient generation for process-neutral and K-only neutral images, the motivation being to provide compatibility between gray reproduction and high chroma color representation **(Column 1, line 65 to column 2, line 3)**.

Regarding claim 5, Sawada teaches the processor-readable medium as recited in claim 1, wherein adjusting the degree to which UCR color coefficient generation is similar includes instructions for: assigning a greater value to UCR coefficients of a minor color **(Fig. 5, output of 183, i.e. output is greater for a minor color (K small))**; and assigning a lesser value to UCR coefficients of more dominate colors **(Fig. 5, output of 183, i.e. output is smaller for more dominant colors (K large))**.

Regarding claims 6 and 18, Sawada teaches the processor-readable medium and associated apparatus as recited in claim 1, wherein the mapping includes instructions for: moving points in a process-neutral color space, thereby mapping the CMYK data to reduce color in neutral colors in process-neutral images **(column 15, lines 53-60)**.

Regarding claims 9 and 21, Sawada teaches a method and analogous apparatus of controlling a degree to which a process-neutral image and a K-only neutral image are harmonized, comprising: generating similar BG values for colors within the process-neutral image and the K-only neutral image beyond a first distance from a first neutral axis **(Figs. 4 and 5 in view of claim 1 above)**; generating dissimilar BG values for colors within the process-neutral image and the K-only neutral image within the first distance from the first neutral axis **(Figs. 4 and 5 in view of claim 1 above)**; generating similar UCR values for colors within the process-neutral image and the K-only neutral image beyond a second distance from a second neutral axis **(Figs. 4 and 5 in view of claim 1 above)**; generating dissimilar UCR values for colors within

the process-neutral image and the K-only neutral image within the second distance from the second neutral axis **(Figs. 4 and 5 in view of claim 1 above)**; and mapping CMY color data to CMYK color data using the generated BG coefficients and the generated UCR coefficients **(Fig. 3)**.

Sawada does not explicitly disclose the similarity of BG values for colors within the process-neutral image and the K-only neutral image beyond a first distance from a first neutral axis, and dissimilarity of BG values and UCR values for colors within the process-neutral image and the K-only neutral image within the first distance from the first neutral axis.

However Sawada discloses that the values in the lookup table (i.e. K) monotonously decreases beyond a first distance from a first neutral axis **(column 14, lines 25-28)**. Therefore it is implicit from Fig. 5, 183 that BG values and UCR values for colors within the process-neutral image and the K-only neutral image beyond a first distance from a first neutral axis will be similar, and BG values and UCR values for colors within the process-neutral image and the K-only neutral image within the first distance from the first neutral axis will be dissimilar.

Regarding claim 22, Sawada teaches the color mapping apparatus of claim 21, wherein the means for mapping includes: means for reducing color from a neutral axis of a process-neutral color space, within which the process-neutral image is defined, by moving points in the process-neutral color space to make the neutral axis less colorful **(column 15, lines 53-60)**.

7. **Claims 2 and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawada in view of Balasubramanian et al. (Hereinafter "Balasubramanian": US 7072072).

Sawada teaches the processor-readable medium and associated apparatus as recited in claim 1.

Sawada does not teach the limitations wherein adjusting the degree to which BG color coefficient generation is similar includes instructions for: using similar BG coefficients for a color in both process-neutral and K-only images, wherein the color is greater than a distance from a neutral line; using dissimilar BG coefficients for a color in both process-neutral and K-only images, wherein the color is less than the distance from the neutral line; and controlling the distance.

However Balasubramanian discloses a method wherein adjusting the degree to which BG color coefficient generation is similar includes instructions for: using similar BG coefficients for a color in both process-neutral and K-only images, wherein the color is greater than a distance from a neutral line **(Fig. 3 and Column 5, lines 54-59)**; using dissimilar BG coefficients for a color in both process-neutral and K-only images, wherein the color is less than the distance from the neutral line **(Fig. 3 and Column 5, lines 54-59)**; and controlling the distance **(Column 7, lines 1-8)**.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Balasubramanian's method to Sawada's teaching, the

motivation being to optimize the rendering of text and line art **(Balasubramanian: column 2, lines 1-3)**.

8. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Sawada in combination with Balasubramanian as applied to claim 2 above, and further in view of Horie (US 6628833).

Sawada in combination with Balasubramanian teaches the processor-readable medium as recited in claim 2.

Sawada in combination with Balasubramanian does not teach the limitation wherein controlling the distance includes instructions for: setting the distance based on whether the process-neutral and K-only neutral images will be printed side-by-side.

However Horie discloses a method wherein images are processed differently based on whether the process-neutral and K-only neutral images will be printed side-by-side **(Figs. 28 and 33, and column 13, lines 1-7)**.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Horie's method to the combined teaching of Sawada and Balasubramanian, the motivation being to improve picture quality **(Horie: column 1, lines 37-42)**.

9. **Claims 4 and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawada in view of Balasubramanian.

Sawada teaches the processor-readable medium and associated apparatus as recited in claim 1.

Sawada does not teach the limitations wherein adjusting the degree to which UCR color coefficient generation is similar includes instructions for: using similar UCR coefficients for a color in both process-neutral and K-only images, wherein the color is greater than a distance from a neutral line; and using dissimilar UCR coefficients for a color in both process-neutral and K-only images, wherein the color is less than the distance from the neutral line; and an apparatus for controlling the distance to achieve a desired degree of harmony between the process-neutral and K-only images.

However Balasubramanian discloses a method wherein adjusting the degree to which UCR color coefficient generation is similar includes instructions for: using similar UCR coefficients for a color in both process-neutral and K-only images, wherein the color is greater than a distance from a neutral line **(Fig. 3 and Column 5, lines 54-59)**; and using dissimilar UCR coefficients for a color in both process-neutral and K-only images, wherein the color is less than the distance from the neutral line **(Fig. 3 and Column 5, lines 54-59)**; and an apparatus for controlling the distance to achieve a desired degree of harmony between the process-neutral and K-only images **(Column 7, lines 1-8)**.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Balasubramanian's method to Sawada's teaching, the motivation being to optimize the rendering of text and line art **(Balasubramanian: column 2, lines 1-3)**.

10. **Claims 12 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawada in view of Steinkirchner (US 5392365).

Sawada teaches the method and analogous apparatus of claim 9.

Sawada does not teach the limitation wherein the mapping includes: mapping colors into a color space defined in Lab; mapping each point within the color space defined in Lab, wherein points along a process-neutral axis are mapped to more neutral colors; and means for mapping the color space defined in Lab into CMY or CMYK.

However, Steinkirchner discloses a mapping wherein the mapping includes: mapping colors into a color space defined in Lab **(column 5, lines 2-4)**; and mapping each point within the color space defined in Lab, wherein points along a process-neutral axis are mapped to more neutral colors **(column 5, lines 34-36, and 49-55)**; and means for mapping the color space defined in Lab into CMY or CMYK **(Fig. 11)**.

11. Claims 24, 27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steinkirchner in view of Sawada.

Regarding claims 24 and 27, Steinkirchner teaches a processor-readable medium comprising processor-executable instructions for mapping color data, the processor-executable instructions comprising instructions for: generating similar UCR **(and BG)** values for process-neutral and K-only neutral color images beyond a distance from a neutral axis **(column 5, lines 12-17, and lines 49-55, i.e. similar treatment beyond a distance from the neutral axis)**; generating dissimilar UCR **(and BG)** values for process-neutral and K-only neutral color images within the

distance from the neutral axis **(column 5, lines 12-17, and lines 49-55, i.e. black toner only for K-only neutral images (black text edges) within a distance from the neutral axis)**; and mapping CMY color data to CMYK color data using the generated UCR coefficients **(Fig. 11)**.

Steinkirchner does not explicitly disclose the processor-readable medium comprising processor-executable instructions. However Steinkirchner discloses an image processor **(Fig. 10, 108)** for processing the images and it is well known in the art that an image processor comprises a processor-readable medium comprising processor-executable instructions.

Steinkirchner does not explicitly disclose the generation of UCR and BG coefficients. However the generation of UCR and BG coefficients is an implicit component of the under color removal process **(column 5, lines 14-15)**, as disclosed for example by Sawada **(Figs. 4 and 5)**.

Regarding claim 29, Steinkirchner combined with Sawada teaches the processor-readable medium as recited in claim 27, wherein the mapping includes instructions for: reducing color within a region adjacent to the neutral axis by moving most or all points in a process-neutral color space within which the process-neutral axis is defined **(Steinkirchner: column 5, lines 22-33)**.

12. **Claim 25** rejected under 35 U.S.C. 103(a) as being unpatentable over Steinkirchner combined with Sawada as applied to claim 24 above, and further in view of Ohta et al. (Hereinafter "Ohta": US 5673335).

Steinkirchner combined with Sawada teaches the processor-readable medium as recited in claim 24.

Steinkirchner combined with Sawada does not teach the processor-readable medium additionally comprising instructions for: weighting the UCR values for each color, wherein weight is applied as a function of a mixture of primary vs. secondary color.

However, Ohta discloses color image processing method comprising instructions for: weighting the UCR values for each color, wherein weight is applied as a function of a mixture of primary vs. secondary color **(column 4, equation 6)**.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Ohta's method to the combined teaching of Steinkirchner and Sawada, the motivation being to improve color reproducibility **(Ohta: column 4, lines 33-36)**.

13. **Claim 26** rejected under 35 U.S.C. 103(a) as being unpatentable over Steinkirchner combined with Sawada as applied to claim 24 above, and further in view of Maltz et al. (Hereinafter "Maltz": US 5734802).

Steinkirchner combined with Sawada teaches the processor-readable medium as recited in claim 24.

Steinkirchner combined with Sawada does not teach the processor-readable medium additionally comprising instructions for: weighing the UCR values as a function of distance from the neutral axis, wherein those colors that are further away from the

Steinkirchner combined with Sawada teaches the processor-readable medium as recited in claim 24.

Steinkirchner combined with Sawada does not teach the processor-readable medium additionally comprising instructions for: weighting the UCR values for each color, wherein weight is applied as a function of a mixture of primary vs. secondary color.

However, Ohta discloses color image processing method comprising instructions for: weighting the UCR values for each color, wherein weight is applied as a function of a mixture of primary vs. secondary color **(column 4, equation 6)**.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Ohta's method to the combined teaching of Steinkirchner and Sawada, the motivation being to improve color reproducibility **(Ohta: column 4, lines 33-36)**.

13. **Claim 26** rejected under 35 U.S.C. 103(a) as being unpatentable over Steinkirchner combined with Sawada as applied to claim 24 above, and further in view of Maltz et al. (Hereinafter "Maltz": US 5734802).

Steinkirchner combined with Sawada teaches the processor-readable medium as recited in claim 24.

Steinkirchner combined with Sawada does not teach the processor-readable medium additionally comprising instructions for: weighing the UCR values as a function of distance from the neutral axis, wherein those colors that are further away from the

neutral axis than intermediate lines are weighted from the intermediate lines to color lines of both the primaries and secondaries, resulting in two weighted UCR values which are weighted according to percentage of primary and secondary color.

However, Maltz discloses a color processing method comprising instructions for: weighing the UCR values as a function of distance from the neutral axis, wherein those colors that are further away from the neutral axis than intermediate lines are weighted from the intermediate lines to color lines of both the primaries and secondaries, resulting in two weighted UCR values which are weighted according to percentage of primary and secondary color **(Fig. 2 and column 6, lines 5-20)**.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Maltz's method to the combined teaching of Steinkirchner and Sawada, the motivation being to improve color translation for images having both pictorial and graphical elements **(Maltz: column 1, line 62 to column 2, line 14)**.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clifton G. Daley whose telephone number is 571-270-3144. The examiner can normally be reached on Monday - Friday 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on 571-272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Samir Ahmed
SPE
Art Unit 2624

CGD
1/4/2008

SAMIR AHMED
SUPERVISORY PATENT EXAMINER